

# UNITED STATES PATENT OFFICE.

WILLIAM J. PLECKER, OF PEORIA, ILLINOIS.

## CONDUCTOR-PIPE AND METHOD OF JOINING EDGES OF SAME.

SPECIFICATION forming part of Letters Patent No. 518,767, dated April 24, 1894.

Application filed December 18, 1893. Serial No. 493,936. (No model.)

*To all whom it may concern:*

Be it known that I, WILLIAM J. PLECKER, a citizen of the United States, residing at Peoria, in the county of Peoria and State of Illinois, have invented certain new and useful Improvements in Conductor-Pipes and in Methods of Joining the Edges of the Same; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to improvements in conductor pipes, and in the method of joining the edges of the sheet metal blank from which the pipe is made. Heretofore, three general ways have been followed of joining the opposing edges of a blank so as to form a tube. The first and probably the most common is that of bending the edges so as to form a seam and then by compressing and locking them tightly together. Another method which has been followed is that of forming laterally extending lips or tongues upon one edge of the blank which are inserted in slots or apertures upon the other edge, the tongues or lips being bent down and back so as to form a lock. There is also a third method, that is, providing one edge of the blank with longitudinally extending lips bent at an angle to the face of the blank which are inserted in apertures in the opposite plate, and which are then bent again so as to engage with the metal adjacent to the aperture of the said opposite plate. Then by compression, the metal engaged by the tongue is compressed into the aperture left by cutting out the tongue. To all of these three methods or ways of joining the edges of the blank there are serious disadvantages, such as there being formed three or four thicknesses of metal at the juncture of the edges, this disadvantage being peculiar to the first two methods. In forming a joint by the last of the three methods it is impossible to compress the tongue and the underlying metal so as to present a neatly finished joint. The tongue which is cut out from and bent up at an angle to the face of the blank had to be formed by making an incision inwardly from the edge of the blank and then parallel thereto, thereby weakening

the joint and frequently permitting the edges to become disengaged. For it will be readily seen that when the tongue is bent down into place, compressing the metal of the opposing plate, the tongue will be forced laterally on account of the thickness of the metal which is compressed, thereby cracking the tongue or lip at its base. Thus the edge of the plate in which the lips are formed, will be serrated and greatly weakened. My joint has none of these disadvantages. It is more cheaply and quickly made than any joint which has been heretofore put upon the market. It presents a neater and more finished appearance, and enables two or more sections of pipes to be joined together so as to present a practically water tight joint.

In the drawings, Figure 1 shows a section of pipe with the edges joined by my improved method. Fig. 2 shows a pipe blank in plan after the tongues have been formed in its edges. Fig. 3 shows the same in perspective. Fig. 4 shows a section of pipe, after it has been bent into a tube, but before the tongues have been bent down. Fig. 5 is a section on line  $x-x$  Fig. 4. Fig. 6 is a similar section on line  $y-y$  Fig. 1.

It will be easily understood how the joining of the edges of the tube blank is accomplished. I first, by means of a proper punch form the tongues  $a b$  in the edges  $A, B$  of the blank  $C$  respectively. Each tongue has converging sides, so that the tongue itself is substantially V-shaped for a purpose to be described. The tongues  $b b$  project upwardly from the face of the blank while the tongues  $a a$  project downwardly. The apertures  $a' b'$  which are left in the blank by cutting out the tongues  $a b$  are enlarged by means of a separate punch or die, or by means of the same punch when forming the tongue, and have parallel sides and a curved end. It will be seen by examination of Figs. 2 and 4 that the tongues are almost diametrically opposite, the apertures  $a'$  extending to one side of the diametric line of the tongues  $a b$  and the apertures  $b'$  extending to the opposite side. Thus when the blank is bent into tubular form as shown in Fig. 5, the tongue  $b$  enters the aperture  $a'$  and the tongue  $a$  at the same time enters the aperture  $b'$ , the

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bases of the tongues *a b* abutting against each other. Then by means of rollers or equivalent crushing or hammering devices, the tongues *a b* are forced into the planes of the edges *B A* respectively. Tongue *b* engaging with the metal *a'* of the edge *A* compresses the metal into the aperture *b'*, and at the same time tongue *a* compresses the metal *b'* of the edge *B* into the aperture *a'*. This will be clearly seen by an examination of Fig. 6. When the joint has been completed, it is impossible to disunite the edges without breaking off the tongues, and this rarely ever happens, in fact practically never happens, because the strain which the joint experiences is a lateral strain, which would compel the shearing of the tongues edge-wise before the joint would give way.

As hereinbefore said, the tongues *a b* have converging sides which may be either straight or curved, while the apertures *a' b'* are more or less rectangular in shape. Preferably I have shown the apertures as having curved ends, but this is not necessary as the ends might be squared with equal results. Thus each tongue is less in its cross dimensions than its adjacent aperture so that when the joint has been formed and the tongues bent as near as possible to their original positions, there will be sufficient space between the edges of the tongue and the sides of the aperture for the thickness of the metal which is compressed into the aperture by the tongue. Another reason for cutting the tongues wedge-shaped is that by so forming them it is much easier to insert the tongues in the opposing apertures when the blank is bent into tubular form as shown in Fig. 5. For it is obvious that were the tongue the same size and shape as the aperture left by cutting out the opposing tongue, it would be very difficult to get the tongues to register properly with the apertures. The sharp edges of the tongues would engage with the like edges of the apertures, and it would require a great expenditure of time to get each tongue into its proper aperture. Hence, in order to obviate this difficulty, I cut the tongues V or wedge shaped, and then enlarge the apertures, which are left after bending back the tongues.

The tongues are formed in the blank, not directly in the edge but a short distance therefrom and it will be readily understood that this greatly strengthens the joint and prevents the shearing away of any of the tongues, which frequently happens when the tongues are formed of the metal lying upon the edge of the blank.

What I claim is—

1. The herein described method of joining the edges of a pipe blank, it consisting in forming duplicate tongues on the opposite sides of said blank, bending the blank into tubular form, inserting the tongues into the apertures left by cutting the opposing tongues; and then

bending the said tongues upon the said blank, substantially as set forth.

2. The herein described method of joining the edges of a pipe blank, which consists in forming oppositely extending wedge shaped tongues whose bases are diametrically opposite, bending the tongues on either side upwardly and downwardly respectively, from the face of the blank, then enlarging the wedge-shaped apertures left by the tongues, then bending the blank into tubular form, inserting each tongue into its opposing aperture, and finally crushing the tongues into the planes of the opposing edges, substantially as set forth.

3. The herein described method of joining the edges of a metallic plate or plates, which consists in cutting oppositely extending tongues in said edges or plates, bending said tongues at an angle in either direction respectively to the faces of the plates or edges, inserting each tongue in the aperture formed in the edge or blank by cutting the opposing tongue, and then bending the tongues into planes parallel with the faces of the edges or plates, substantially as set forth.

4. The herein described method of joining the edges of a pipe blank, it consisting in forming oppositely extending tongues whose bases are substantially diametrically opposite, bending the tongue on one edge upward from the face of the blank, bending the tongue from the opposite edge downward from the face of the blank, bending the blank into tubular form and inserting each tongue into the aperture formed by cutting the opposing tongue and then bending the tongues down into the plane of the opposing edges, substantially as and for the purposes set forth.

5. As a new article of manufacture, the herein described pipe blank provided at one edge with a series of upwardly extending tongues, and at the opposite edge a series of downwardly extending tongues, said series of tongues extending in opposite directions and having their bases diametrically opposite each other, substantially as set forth.

6. As a new article of manufacture, the herein described pipe blank provided on one longitudinal edge with a series of wedge shaped tongues, and on the opposite edge with a similar series of wedge shaped tongues, whose bases are diametrically opposite those of the first said series, the apertures at the bases of the tongues of one of said series, extending in an opposite direction from those at the bases of the tongues of the other said series, substantially as and for the purposes set forth.

In testimony whereof I affix my signature in presence of two witnesses.

WILLIAM J. PLECKER.

Witnesses:

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(No Model.)

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CONDUCTOR PIPE AND METHOD OF JOINING EDGES OF SAME.

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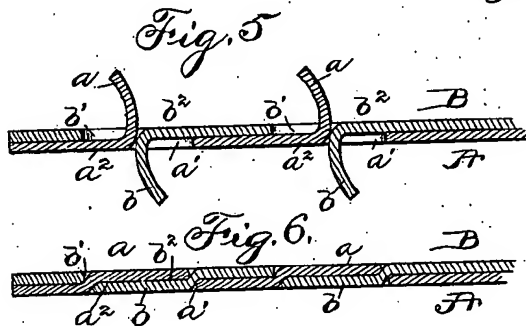
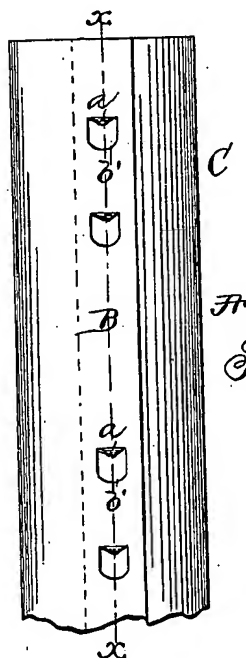
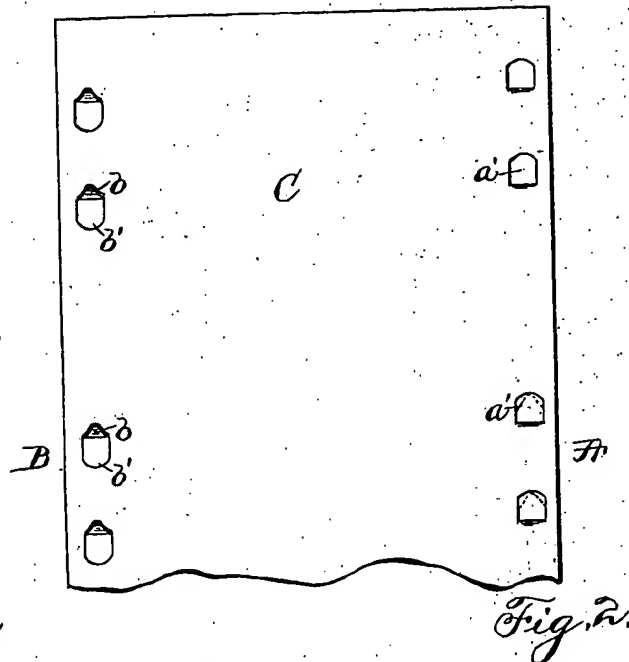
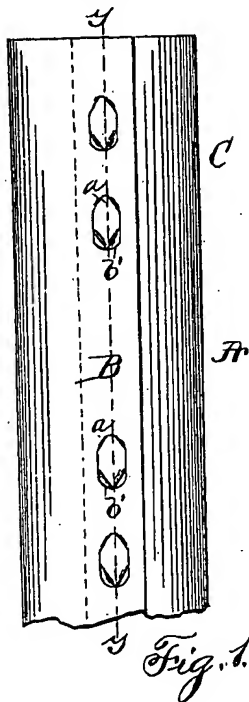


Fig. 4.

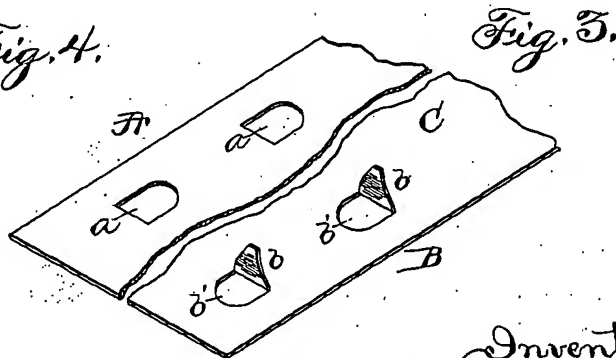


Fig. 3.

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